

PRACICE - Unit 2 Test – Analytic Geometry

Expectation	Level Achieved
solve problems using analytic geometry involving properties of lines and line segments	

1) Calculate the **length, slope and midpoint** for the line that joins the following 2 points. You must state the formula that was used in order to get full marks.

A(3,-11) B(-8,1)

2) Write the equation of the circle with center (9, 0) and a diameter of 24.

3) Given a circle with center (0, 0) and which passes through the point (-7, 8),

a) write the equation.

b) state the coordinates of the x-intercepts.

c) state the coordinates of the y-intercepts.

Expectation	Level Achieved
verify geometric properties of triangles and quadrilaterals, using analytic geometry	

4) You want to determine the area of the triangle with vertices $A(-2,6)$, $B(-4,-3)$, $C(10,4)$

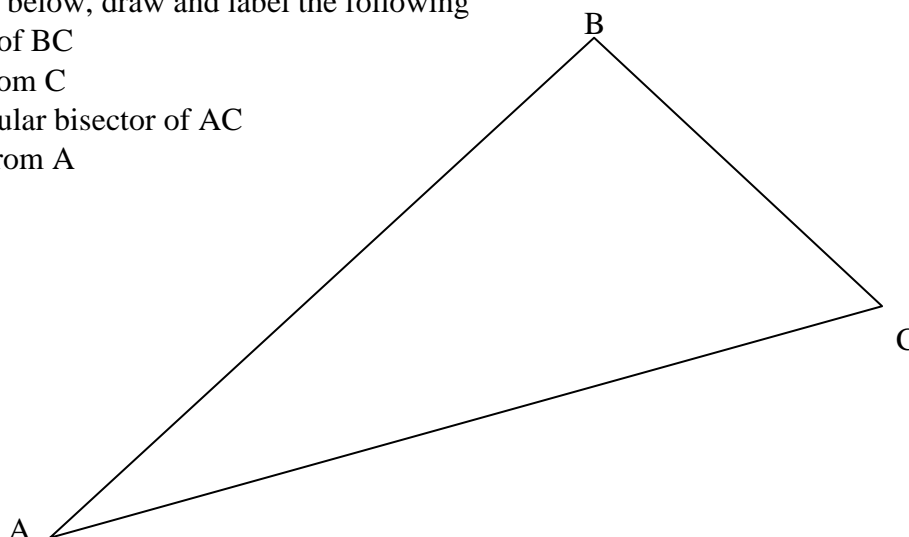
List the steps required to find the area of the triangle, including formulae

5) Classify quadrilateral ABCD given the following measurements. Justify your choice

m_{AB}	m_{BC}	m_{CD}	m_{DA}	d_{AB}	d_{BC}	d_{CD}	d_{DA}
$-\frac{3}{11}$	$\frac{11}{3}$	$-\frac{3}{11}$	$\frac{11}{3}$	3	3	3	3

6) On the triangle below, draw and label the following

- Midpoint of BC
- Median from C
- Perpendicular bisector of AC
- Altitude from A



7) Bobby read that the diagonals of a rectangle are always perpendicular. Verify or disprove this property for the rectangle with vertices $A(4, -2)$, $B(4, 5)$, $C(-5, -2)$ and $D(-5, 5)$.

8) Identify the centroid for $\triangle ABC$ defined by the following points: **A(1,4) B(5,5) C(7,-2)**

Challenge Questions

1. Jim claims that if you have any quadrilateral $ABCD$ and you find the midpoints of the sides $PQRS$ then the diagonals of $ABCD$ intersect at the same point as the diagonals of $PQRS$. Outline the steps that you would take to verify or disprove Jim's claim. (Include any diagrams, formulas, etc. that would be needed).

2. A quadrilateral whose vertices are on a circle is called a cyclic quadrilateral. Ptolemy is credited with the following theorem:

If $ABCD$ is a cyclic quadrilateral, then the sum of the products of the two pairs of opposite sides is equal to the product of the diagonals.

If you were given the co-ordinates of the vertices of a cyclic quadrilateral, outline the steps you would take to verify Ptolemy's Theorem. (Include any diagrams, formulas, etc. that would be needed).

3. Four lines intersect to form a quadrilateral we have studied this year (*rhombus, parallelogram, rectangle, square*). Three of these lines are defined below.

Determine the equation of a fourth line and state the name of the quadrilateral you have created.

Line A: $-3x + y - 4 = 0$

Line B: $2x + 6y + 12 = 0$

Line C: $y = 3x - 2$

Line D: _____